

REMARKS/ARGUMENTS

This Request for Continued Examination pursuant to 37 CFR § 1.114 and Amendment is responsive to the Final Rejection of the Examiner mailed August 7, 2003. In that Final Rejection, objections were made to claims 4, and 13. Those objections have been serially addressed by deleting "is" from claim 4 and placing an antecedent for the "reflection enhancing film" in claim 12.

In that action, claims 1, 4, 12, 17 and 21 were rejected under 35 USC 102(e) as being anticipated by Doi US Patent 6,539,157, this reference being cited for the first time.

Further, claims 13, 18, 19 and 25 were rejected under 35 USC 103(a) has been unpatentable or obvious over Doi.

Claims 2, 3, 5-11, 14-16, 20, 26 and 27 were indicated as allowable.

Claims 22 - 24 were allowed.

Doi relates to a laminated optical wave guide having substantially planar characteristics. Applicant has amended independent claims 1, 21, and 22 to distinguish over Doi. Specifically, the use of a wire or mold shaped to an external profile of a capillary optic is used for the impression disclosed herein. As a result, the claims distinguish from the laminated optical wave guide of Doi with its substantially planar characteristics.

In the following remarks, the invention of claim 1 as amended will be summarized. Thereafter, the specification of Doi quoted in distinguished. It will be shown in that Doi does not disclose nor suggest the impressing of a wire having the external profile of a capillary optic into a soft metal plate to produce an optic.

Invention Summarized

The invention relates to a capillary optic produced by impression process steps. As a first step, there is provided a wire mold having an external profile figured for reflective radiation transmission along a capillary axis. There is provided at least one soft plate. The provided wire mold is impressed into the soft plate. Thereafter, the wire mold is removed from the soft plate to leave a vacant impression figured for reflective radiation transmission in the soft plate. Finally, the impression is enclosed to provide for reflective transmission along the capillary axis of the vacant impression.

Doi Distinguished

Applicants invention relates to a capillary optic. Capillary is defined in Merriam Webster's Dictionary as **1 a** : resembling a hair especially in slender elongated form <capillary leaves> **b** : having a very small bore <a capillary tube>. Doi relates to an optical wave-guide, which is configured into a substrate layer of the printed wiring board.

Doi has a planar waveguide structures, which are meant for communicating optical radiation from one circuit board component to another. A crucial difference distinguishing the waveguide structures of Doi from the applicant's capillary optics is that waveguides are by definition not resembling a hair in a slender elongated form. As such, Doi cannot be said to suggest the focusing devices which are the preferred embodiment of the optics herein. The claims of the applicant describe capillary optics that are precisely figured for redirecting radiation by reflection to produce focused or collimated radiation from quasi point-sources of radiation. A wide range of such sources have been described including x-ray tubes, synchrotron light sources, lasers, optical fibers, electron microprobes, and plasma sources. The applicant describes a new method to produce focusing and collimating optics using a purely mechanical molding process about a precisely tapered wire.

Doi relates only to printed wiring boards having non-focusing waveguides. Specifically, as stated in the Summary of the Invention at column 1, lines 45 through 49:

Printed wiring boards may be produced that comprise a) a substrate layer, and b) a hollow, mirror clad optical wave guide laminated onto the substrate layer. The printed wiring board further comprises a cover material coupled to the wave guide, and at least one additional layer coupled to the cover material. (emphasis added)

Doi describes a process of molding at column 4, lines 44 to 47:

Molding 210 the optical wave guide 20 is a process where the optical material 204 is heated and a precut mold 212 is forced into the optical material 204 to form the wave guide 20.

In the words of Doi at column 5, lines 17 to 30, the form of the optical wave guide 20 coupled to the printed wiring board is further described:

Further, it is preferred that the hollow optical wave guide's 20 contemplated herein comprise a hollow material that is relatively and substantially planar. As used herein, the term "planar" means that the wave guide 20 is designed to be spatially within a plane -- or what might be considered as an "x-y" coordinate system. Obviously, the optical wave guide 20 will have a depth to it, or a "z" component in accordance system, but the wave guide 20 will still be substantially planar. There may be sections of the wave guide 20 that are bumpy or rough -- but again, it is desirable the wave guide 20 be substantially planar. Nevertheless, ultimately, the dimensions in physical properties of the optical wave guides 20 will be determined by the customer, the electronic component, and the product. (emphasis added)

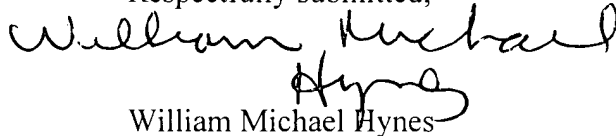
As distinguished from Doi, applicant does not have a hollow, mirror clad, substantially planar optical wave guide laminated onto the substrate layer. Instead, applicant utilizes a wire mold having an external profile figured for reflective radiation transmission along a capillary axis. The Doi prescribed heating of the soft mold material is not utilized. Further, the planar surface of Doi is not used. Instead, the wire mold has non-uniform external profile, which is figured for radiation focusing along the capillary axis of the wire mold. It is not a "hollow, mirror clad optical wave guide laminated onto...(a) substrate layer." See Doi column 1, lines 46-47.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



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